INFLUENCE OF RADIATION ON HUMAN HEALTH UNDER GLOBALIZATION

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Annotation. *This article discusses excessive increase in radiation and its negative impact on the human body. Detailed information about units of measurement and radiation doses, and instruments for measuring radiation is also provided.*

Key words*: Dose, sievert, energy, nuclear physics, detector, gray attribute, equivalent dose, kerma, dose field.*

Introduction. When we talk about radiation, we mean ionizing radiation. That is, nuclear radiation consists of subatomic particles or electromagnetic waves that have sufficient energy to ionize atoms or molecules by removing electrons. Some particles can travel at speeds up to 99% of the speed of light, and electromagnetic waves are found in the high-energy part of the electromagnetic spectrum[1]. The harmful effects of radiation on human health are no secret. When radioactive radiation passes through the human body or when contaminated substances enter it, the energy of the waves and particles is transferred to and from our tissues to the cells. As a result, the atoms and molecules that make up the body are damaged, leading to dysfunction and even death. This all depends on the dose of radiation received, the person's health and the duration of exposure.

Although the world community is aware of the dangers of radiation, some countries continue to develop nuclear weapons. It is known that 1054 nuclear devices were detonated in the USA, 715 in the USSR, 196 in France, 45 in Great Britain, 45 in China, 5 times in India and Pakistan. To date, more than 170 nuclear accidents have

occurred on Earth. Each of them had varying degrees of negative consequences. To date, several thousand nuclear warheads created in countries around the world are capable of destroying all life on earth several times over, and it is even predicted that it will be possible to throw the globe off its axis.

Analysis and results. The main goal of radiation protection is to prevent contamination of the biosphere with radioactive substances, to protect the human body and animals from harmful radiation, etc. Information about the biological effect of harmful radiation on the body is the basis for the development of radiation protection or radiation safety standards. Ensuring safe conditions when working or using radioactive substances, first of all, consists in reliable protection of workers from exposure to a source of dangerous radiation (nuclear reactors, gamma flaw detectors, radioisotope thermoelectric generator, etc.).

Radiation is the propagation of energy in the form of particles or waves. Light, ultraviolet rays, infrared thermal radiation, microwaves, radio waves are different forms of radiation. Some radiations are called ionizing because they cause the irradiated substances to ionize. Their negative impact on humans ends with serious consequences. Knowing this, it is natural to be careful in dealing with them. There are no barriers to ionizing radiation in the body, so any molecule can be exposed to radiation. As a result, excitation of some atoms can cause biochemical changes, genetic diseases, etc. due to the transformation of some substances into other substances. The human body consists of proteins, fats and various cells, and radiation affects the body at the micro level, which is not immediately noticeable, but manifests itself after many years. Damage to certain groups of proteins in a cell can lead to cancer, as well as genetic mutations that are passed on from generation to generation. The effects of low doses of radiation are very difficult to detect because they take decades to take effect. However, a quantum dosimeter helps measure the radiation level of any object. A quantum dosimeter is a device used to detect, monitor or identify ionizing particles such as nuclear fission, cosmic particles, etc. It detects radiation or reactions in a particle accelerator. In addition to recording the presence of a particle, detectors can

measure the particle's energy and other attributes such as momentum, spin, charge, and particle type[2].

Radiation dose is measured in two different ways: internal and external absorbed dose. In this case, the entry of radioactive substances into the human body during human exhalation or radiation absorbed by radiation sources in nature is determined by evaluating dosimeters. There are several units of radiation, and they are measured:

✓ Gray (Gy) - the value of the absorbed dose per unit mass, as well as ($J \cdot kg^{-1}$)

✓ Equivalent dose (H) is measured in sieverts (Zv).

✓ Effective dose (E) is measured in sieverts.

✓ Kerma (K) is measured in gray

✓ Dose area value (DAV) is measured in gray centimeters

✓ Dose length value (DLV) - gray measured in centimeters

✓ Rad – an obsolete unit of absorbed radiation dose, defined as 1 rad = 0.01 Gy = 0.01 J/kg.

✓ X-ray is an old unit of measurement for exposure to x-rays[3]

Conclusion. Even the smallest doses of radiation cause irreversible genetic changes that are passed on from generation to generation, leading to the development of Down syndrome, epilepsy and other mental and physical development disorders. What is especially scary is that both food and household items are contaminated with radiation. Recently, cases of seizure of counterfeit and low-quality products that are a source of strong ionizing radiation have become more frequent. Even children's toys are radioactive! The only way to protect yourself and your loved ones from harmful effects is to buy and use a radiation dosimeter. With it, you can check in seconds the safety of children's toys, food, decorations and anything else you bring into the house where your children play.

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